

PATENT APPLICATION NO. 09/805,806
DOCKET NO. 29287/119

OK disposed on the upstream side with respect to the moving direction of said magnetic head and wherein said magnetic disk apparatus is a perpendicular magnetic recording apparatus.

REMARKS

Claims 1-10 are pending. By this Preliminary Amendment, claims 5-7 are canceled and new claims 12-15 are added. Initial examination and allowance in due course are solicited.

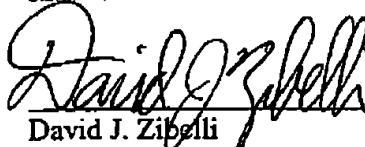
Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned A "Version With Markings To Show Changes Made".

The Office is authorized to charge any fees due for this application under 37 C.F.R. § 1.16 or 1.17 to Deposit Account No. 11-0600.

Should there be any questions concerning this matter, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

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DCO 455573 v1

PATENT APPLICATION NO. 09/805,806
DOCKET NO. 29287/119

APPENDIX

"Version with Markings to Show Changes Made"

In the Claims:

Please cancel claims 5-7.

Please amend claims 1-2, 4, 8-10 as follows.

1. (Amended) A magnetic disk apparatus comprising a magnetic head formed by stacking thin films, a rotated magnetic disk, and a means for positioning said magnetic head relative to said rotated magnetic disk, wherein said magnetic head comprises a first magnetic pole and a [second magnetic] recording magnetic pole [disposed on the downstream side of said first magnetic pole with respect to the rotating direction of said magnetic disk], and, at a position on said magnetic disk where the angle S between the rotating direction of said magnetic disk and the film thickness direction of said [second magnetic] recording magnetic pole is maximum, the length of the projection of said [second] recording magnetic pole onto the magnetic disk surface as measured along the radial direction of said magnetic disk is not more than the track pitch of said magnetic disk, wherein the shape of said recording magnetic pole as viewed from a sliding surface of said magnetic disk comprises a first side intersecting said faced portions, a second side faced to said magnetic gap or on the opposite side of said magnetic gap, and a third side intersecting said first and second sides.

2. (Amended) A magnetic disk apparatus comprising a magnetic head, and a rotated magnetic disk, wherein said magnetic head comprises a first magnetic pole and a [second magnetic] recording magnetic pole [disposed on the downstream side of said first magnetic pole with respect to the rotating direction of said magnetic disk], said first and [second] recording magnetic poles have faced portions forming a recording gap therebetween, and the shape of

PATENT APPLICATION NO. 09/805,806
DOCKET NO. 29287/119

projection of said [second magnetic] recording magnetic pole onto said magnetic disk comprises a first side intersecting said faced portions, a second side faced to said magnetic gap or on the opposite side of said magnetic gap, and a third side intersecting said first and second sides, the length of the projection of said recording magnetic pole onto the magnetic disk surface as measured along the radial direction of said magnetic disk is not more than the track pitch of said magnetic disk.

4. (Amended) A magnetic disk apparatus as set forth in claim 3, wherein said magnetic head comprises a first magnetic pole and a [second magnetic] recording magnetic pole [disposed on the downstream side of said first magnetic pole with respect to the rotating direction of said magnetic disk], and, at a position on said magnetic disk where the angle S between the rotating direction of said magnetic disk and the film thickness direction of said [second] recording magnetic pole is maximum, the sum $P \times \sin(S)$ and $W \times \cos(S)$ is not more than the track pitch of said magnetic disk, where P is the film thickness of said [second magnetic] recording magnetic pole and W is the width of said second magnetic pole.

8. (Amended) A magnetic [head] disk apparatus as set forth in claim [7]1, wherein said third side is disposed on the downstream side with respect to the moving direction of said magnetic head and wherein said magnetic disk apparatus is a longitudinal magnetic recording apparatus.

9. (Amended) A magnetic [head] disk apparatus as set forth in claim [7]1, wherein said third side is disposed on the upstream side with respect to the moving direction of said magnetic head and wherein said magnetic disk apparatus is a perpendicular magnetic recording apparatus.

10. (Amended) A magnetic disk apparatus comprising a magnetic head formed by stacking thin films, and a rotated magnetic disk, wherein said magnetic head comprises a first

PATENT APPLICATION NO. 09/805,806
DOCKET NO. 29287/119

magnetic pole and a [second magnetic] recording magnetic pole [disposed on the downstream side with respect to the rotating direction of said magnetic disk], and, at a position on said magnetic disk where the angle θ between the rotating direction of said magnetic disk and the film thickness direction of said [second magnetic] recording magnetic pole is maximum, the length of an overlapped area of the projection of said second magnetic pole onto the magnetic disk surface and track width of said magnetic disk is not more than 5% of said track width.

Please add new claims 12-15 as follows:

12. (NEW) A magnetic disk apparatus as set forth in claim 2, wherein said third side is disposed on the downstream side with respect to the moving direction of said magnetic head and wherein said magnetic disk apparatus is a longitudinal magnetic recording apparatus.

13. (NEW) A magnetic disk apparatus as set forth in claim 3, wherein said third side is disposed on the downstream side with respect to the moving direction of said magnetic head and wherein said magnetic disk apparatus is a longitudinal magnetic recording apparatus.

14. (NEW) A magnetic disk apparatus as set forth in claim 2, wherein said third side is disposed on the upstream side with respect to the moving direction of said magnetic head and wherein said magnetic disk apparatus is a perpendicular magnetic recording apparatus.

15. (NEW) A magnetic disk apparatus as set forth in claim 3, wherein said third side is

DC01 455573 v 1

disposed on the upstream side with respect to the moving direction of said magnetic head and wherein said magnetic disk apparatus is a perpendicular magnetic recording apparatus.